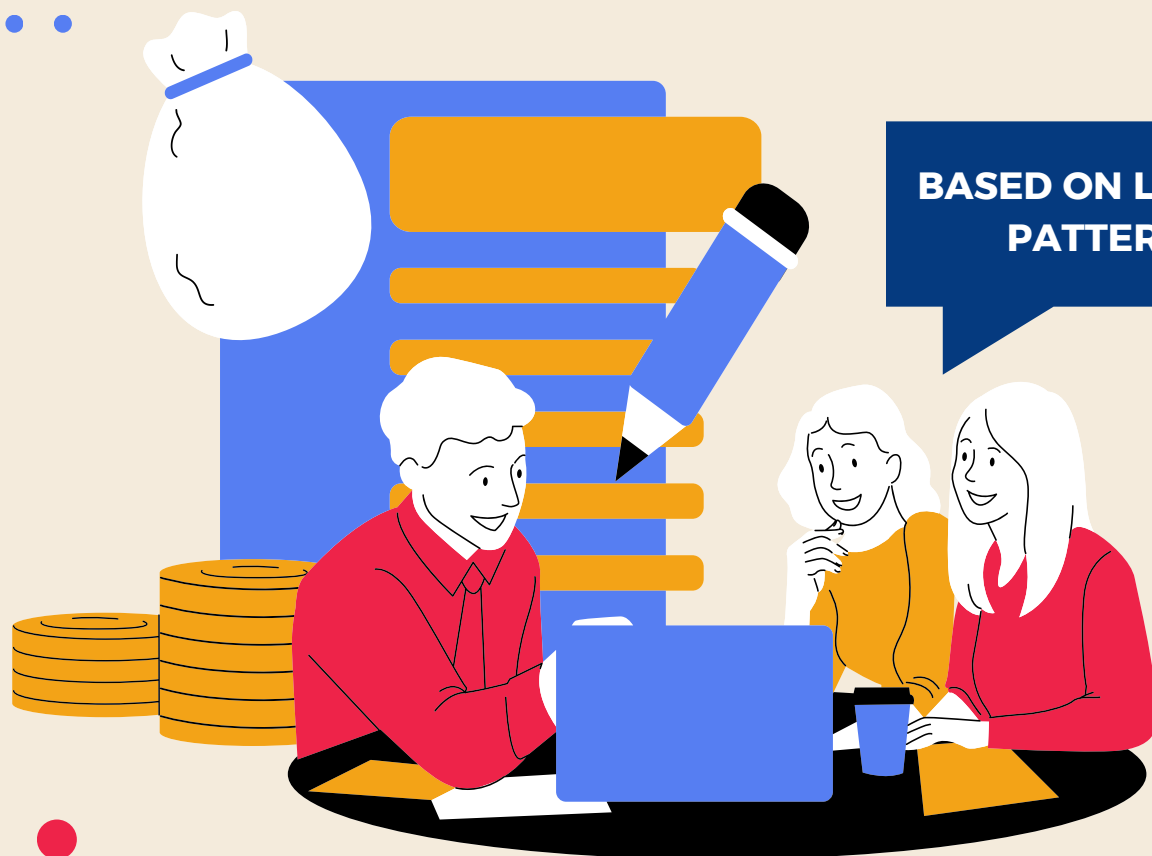




# CUET 2024

## BIOLOGY

### Sample Paper 1



(d) Human = XX-XY type

d) Equus

d) None of the above

d) Collagen tissue

d) None of these

III. The tobacco plants produce their own insecticide.

(d) I, II and III

7. Which method is used to remove particulate matter present in the exhaust of a thermal power plant?

(a) Wet scrubbers      (b) Absorption   (c) Electrostatic precipitator   (d) Gravitational method

8. Which region possesses a significant number of endemic amphibian species?

- North-East Ghats,
- Andaman Nicobar Islands,
- Western Ghats,
- North-West Ghats

9. Which of the following is not an example of adaptive radiation?

- (a) Wombat, numbat, flying phalanger (b) Darwin's finches
- (c) Different mammals in other parts of the world (d) Lemur and spotted cuscus

10. What is the probability of producing a child with sickle cell disease if both parents are carriers?

- (a) 0%                      (b) 25%                      (c) 50%                      (d) 75%

11. Which of the following hormones surges just prior to ovulation?

- a) Luteinizing hormone (LH)
- b) Follicle-stimulating hormone (FSH)
- c) Estrogen
- d) Progesterone

12. Which of the following organisms commonly reproduces through gemmule formation?

- a) Hydra      b) Sponge      c) Penicillium      d) Amoeba

13. Which of the following nitrogenous bases is not found in DNA?

- a) Adenine                      b) Thymine                      c) Guanine                      d) Uracil

14.Regarding common cold consider the following statements

- I. Rhinovirus is responsible for common cold which infects the nasal epithelium and respiratory passage but not the lungs
- II. The symptoms of common cold included nasal congestion and discharge, sore throat, gruffness, cough, headache and tiredness

Which of the statement given above is/are correct?

- a) Only I
- b) Only II
- c) I and II
- d) None of these

15.A man with blood group 'A' marries a woman with blood Group 'B'. The probability of their child having blood group 'O' is

- a) 25%
- b) 50%
- c) 75%
- d) 0%

16.Both corpus luteum and macula lutea are

- a) Found in human ovaries
- b) A source of hormones
- c) Characterized by a yellow color
- d) Contributory in maintaining pregnancy

17.Secondary sewage treatment mainly involves a:

- a) Mechanical process
- b) Chemical process
- c) biological process
- d) Physical process

18.Which of the following plants is considered medicinal?

- a) Cinchona
- b) Opium
- c) Rauwolfia
- d) All of these

19. How does the introduction of a new predator into an ecosystem affect the food chain?

- a) It increases the population of primary producers.
- b) It disrupts the balance of the food chain.
- c) It decreases the number of decomposers.
- d) It has no effect on the food chain.

20. Which of the following codons code for phenylalanine?

- a) UUA                      (b) UUU                      (c) UCU                      (d) UAA

21. Which of the following ART procedures involves the transfer of multiple embryos?

- a) In vitro fertilization (IVF)                      b) Intracytoplasmic sperm injection (ICSI)
- c) Intrauterine insemination (IUI)                      d) Gamete intrafallopian transfer (GIFT)

22. Who first used the term "Niche"?

- a) Elements                      b) Grinnell                      c) Warming                      d) Odum

23. A species that is in danger of extinction is classified as:

- a) Endangered,                      b) Vulnerable,                      c) Rare,                      d) Critically endangered.

24. Which phase is characterized by the population adapting to a new environment and increasing in number?

- a) Log phase                      b) Lag phase                      c) Decline phase                      d) Stationary phase

25. Which statement is incorrect?

- a) Gene therapy involves replacing defective genes with normal ones to treat disease at the molecular level
- b) Calcitonin is a recombinant product used in the treatment of infertility
- c) Bt toxin is a biodegradable insecticide derived from *Bacillus thuringiensis*
- d) *Trichoderma* sp. is a biocontrol agent used to combat fungal diseases in plants

26. Which enzyme is responsible for the synthesis of DNA from RNA template?

- a) DNA polymerase I                      b) RNA polymerase I  
c) Reverse transcriptase                d) Ligase

27. Which of the following is an example of a barrier contraceptive method?

- a) Birth control pill                      b) Intrauterine device (IUD)
- c) Diaphragm                                d) Hormonal implant

28. In a scrubber, the exhaust is passed through:

- a) Spray of water      b) Spray of lime      c) Both (a) and (b)      d) Spray of hot water

29.Cocaine is obtained from

- a) *Erythroxylum coca*    b) *Cannabis sativa*    c) *Datura*    d) Opium plant

30. In equation,  $p^2+2pq+q^2=1$

Were,

- I.  $P^2$ = Homozygous dominant genotype
- II.  $Q^2$ = Heterozygous dominant genotype
- III.  $2pq$ = Heterozygous genotype

Identify which entity ( $p^2$ ,  $q^2$  and  $2pq$ ) is not described correctly?

- a) Only I                  b) I and III                  c) I and II                  d) Only II

31.What type of mutation is responsible for sickle-cell anaemia?

- a) Frame-shift mutation                      b) Point mutation  
c) Both (a) and (b)                          d) None of the above

32.What do you call the ampicillin resistant gene in recombinant DNA that allows for selection of transformed cells?

- a) Vectors                      b) Plasmid                      c) Selectable marker                      d) Cloning sites



33. In which part of the biosphere reserves, human settlement is permissible?

- a) Transition zone      b) Buffer zone      c) Core zone      d) Settlement not allowed

34. The primary components of photochemical smog formed in congested metropolitan cities are:

- a) Ozone, peroxyacetyl nitrate, and NO<sub>x</sub>      b) Smoke, peroxyacetyl nitrate, and SO<sub>2</sub>  
c) Hydrocarbon, SO<sub>2</sub>, and CO<sub>2</sub>      d) Hydrocarbon, ozone, and SO<sub>2</sub>

35. What is the approximate length and width of the testes?

- a) 4-5 cm and 2-3 cm      b) 5-6 cm and 3-4 cm  
c) 6-7 cm and 4-5 cm      d) 7-8 cm and 8-9 cm

36. Which of the following organisms commonly reproduces through gemmule formation?

- a) Hydra      b) Sponge      c) Penicillium      d) Amoeba

37. Phosphorus is essential for the formation of which of the following?

I. Shells II. Bones III. Teeth

Select the correct option:

- a) I and II      b) I and III      c) II and III      d) I, II, and III

38. Smoking results in ...A... build up in the blood and reduce ...B... delivery to the tissue.

Here A and B refers to

- a) A-carbon dioxide; B-carbon monoxide      b) A-carbon dioxide; B-oxygen  
c) A-carbon monoxide; B-oxygen      d) A-oxygen; B-carbon monoxide

39. Which one of the following pairs correctly matches a hormone with a disease resulting from its deficiency?

- a) Luteinizing hormone – failure of ovulation      b) Insulin – Diabetes insipidus  
c) Thyroxine – Tetany      d) Parathyroid hormone – Diabetes mellitus

40. The mass of cells enclosed by the integuments is called

- a) Nucellus                      b) Embryo                      c) Ova                      d) Pollen

41. Which of the following statements about the protein crystals that contain a toxic insecticidal protein is/are correct?

1. The protein is activated by the alkaline pH of the gut of the insect pest.
2. The protein binds with the epithelial cells of the midgut of the insect pest, ultimately killing it.
3. The carrier bacterium that carries the protein is itself resistant to the toxin and is not killed by it.

- a) I and II                      b) I and III                      c) II and III                      d) I, II, and III

42. Which bacterium is responsible for the formation of Swiss cheese?

- a) Aspergillus Niger                      b) Lactobacillus
- c) Propionibacterium sherwani        d) Penicillium roquefortine

43. Gene amplification using primers can be achieved through which of the following techniques?

- a) Microinjection      b) ELISA      c) Polymerase chain reaction      d) Gene gun

44. In incomplete dominance, one allele functions as normal, while another allele may function as:

- a) Normal allele                                      b) Non-functional allele  
c) Normal but less efficient allele          d) All of the above

45. Which enzyme uses lactose as a substrate?

- a) Galactosidase      b) A-galactosidase      c) B-galactosidase      d) G-galactosidase



46. The triplet codons UGA, UAG and UAA are termed as termination codons because they

- A) Do not allow ribosomes to bind with mRNA
- B) Do not specify any amino acid
- C) Prevent binding of tRNA anticodons with mRNA
- D) Stop mRNA synthesis

47. Segment of single-stranded RNA (<1500 nts) that remain associated with other virus for its replication and causes various diseases are commonly known as

- a) Satellite RNA
- b) Helper retrovirus
- c) Micro RNA
- d) Heterogeneous RNA

48. Which of the following ecological pyramids will be inverted in shape?

- a) Ecological pyramids of number in a parasitic food chain of a tree ecosystem
- b) Ecological pyramids of biomass in a parasitic food chain of a tree ecosystem
- c) Ecological pyramids of number of a pond ecosystem
- d) Ecological pyramids of number of a grassland ecosystem

49. Identify the correct complementary base pairing among the following?

- a) Adenine + Guanine, Cytosine + Thymine
- b) Thymine + Guanine, Adenine + Cytosine
- c) Adenine + Thymine, Cytosine + Guanine
- d) Adenine + Adenine, Cytosine + Thymine

50. What will happen if we add *Azotobacter* to a wheat crop?

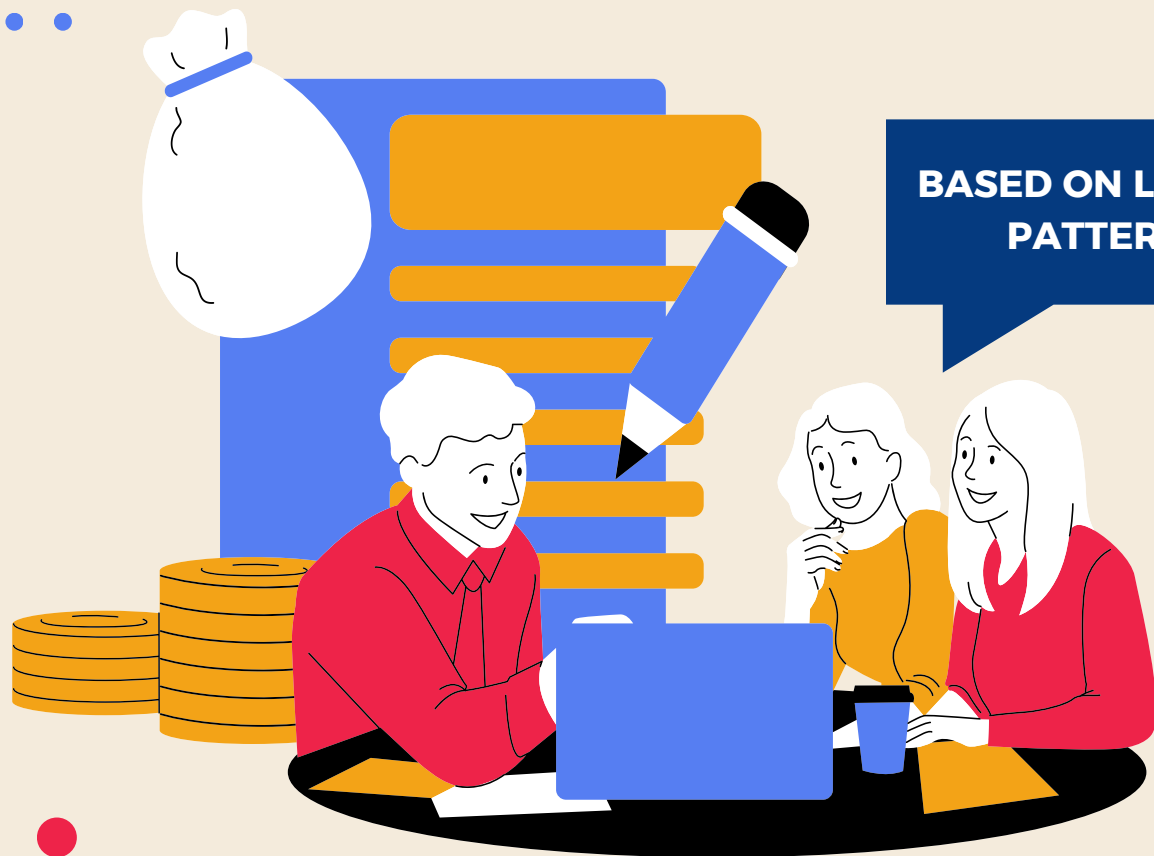
- a) Soil will become rich in nitrogen content
- b) Soil will lose its water holding capacity
- c) The roots of the plants will die rapidly
- d) The roots of the plant will grow rapidly



# CUET 2024

## BIOLOGY

### Sample Paper Solution 1



# Answers

1. Answer: c) *Drosophila* has a different sex determination system, where females have two X chromosomes (XX) and males have one X and one Y chromosome (XY).

2.(a) Eohippus: Eohippus, also known as Hyracotherium, is considered the ancestor of modern horses. It lived during the early Eocene epoch, around 55 million years ago.

3. a) Anemophily. Anemophily is the pollination of flowers by wind.

4.c) Mast cells

Histamines are chemical substances that cause inflammation in the body. They are produced by certain types of white blood cells, including mast cells, which are found in connective tissue and contain histamine-filled granules. When mast cells are activated, they release histamine, which causes blood vessels to dilate and become more permeable, leading to the characteristic symptoms of inflammation, such as redness, swelling, and warmth.

5. Answer: a) Protoplast

Explanation: A protoplast is a plant cell that has had its cell wall removed. It consists of the plasma membrane, cytoplasm, and nucleus of the original cell.

6. d) I, II and III

Explanation: All three statements are correct. Transgenic tobacco plants have been genetically modified to contain a gene from the bacterium *Bacillus thuringiensis*, which encodes an insecticidal protein that damages the inner lining of insects and kills them. The plants produce their own insecticide and are resistant to insect damage.

7. Correct answer: c) Electrostatic precipitator

Explanation: Electrostatic precipitators are commonly used to remove particulate matter from the exhaust of thermal power plants. They use an electric charge to attract and collect the particles, allowing cleaner emissions to be released into the atmosphere.

8. The correct answer is c) Western Ghats. The Western Ghats region in India possesses a significant number of endemic amphibian species. The Western Ghats is a mountain range that runs parallel to the western coast of the Indian peninsula. It is recognized as a global biodiversity hotspot and is known for its high levels of species richness and endemism, including a large number of unique amphibian species.

9.(d) Lemur and spotted cuscus: Lemurs and spotted cuscus are not an example of adaptive radiation, as they do not exhibit a diversification of species into different ecological niches.

10.b) 25% is the probability of producing a child with sickle cell disease if both parents are carriers. Sickle cell disease is caused by a recessive gene, which means that an individual needs two copies of the gene (one from each parent) to express the disease. If both parents are carriers, then each of their children has a 25% chance of inheriting two copies of the sickle cell gene and developing sickle cell disease.

11. Answer: a) Luteinizing hormone (LH) surges just prior to ovulation. This surge triggers the release of the mature egg from the ovary.

12.b) Sponges commonly reproduce through gemmule formation, which involves the formation of specialized cells (gemmules) that can grow into new individuals under favorable conditions.

13. Explanation: Uracil is a nitrogenous base found in RNA, but it is not found in DNA. Instead, DNA uses thymine as one of its four nitrogenous bases. Therefore, option (d) is correct.

14. Answer: c) I and II

Explanation: Rhinovirus is responsible for the majority of common cold cases and it infects the nasal epithelium and respiratory passage but not the lungs, which makes statement I correct. The symptoms of common cold included nasal congestion and discharge, sore throat, gruffiness, cough, headache, and tiredness, making statement II correct. Therefore, the correct answer is option c.

15. Answer: (d) 0%

Explanation: If a man with blood group 'A' marries a woman with blood group 'B', their child can only have blood group 'AB', 'A', 'B', or 'O'. Therefore, the probability of their child having blood group 'O' is 0%.

16..Both corpus luteum and macula lutea are option (b) a source of hormones. The corpus luteum is a temporary endocrine structure that forms in the ovary after ovulation. It produces progesterone and estrogen, which are necessary for the maintenance of pregnancy. The macula lutea is a yellowish spot near the center of the retina that is rich in the pigment's lutein and zeaxanthin. These pigments protect the retina from damage by absorbing blue light and acting as antioxidants.

17. Answer: c) Biological process

Explanation: Secondary sewage treatment primarily involves a biological process. It uses microorganisms to break down organic matter in wastewater, promoting the decomposition of pollutants. This process is typically carried out in an aerated environment, such as an activated sludge system.

18.(d) All of these. Cinchona, opium, and Rauwolfia are all medicinal plants with various uses in traditional medicine and modern pharmaceuticals.

19.(b) It disrupts the balance of the food chain: The introduction of a new predator into an ecosystem can disrupt the balance of the food chain. Predators play a crucial role in regulating the populations of their prey species. When a new predator is introduced, it can impact the abundance and behavior of the prey, leading to changes in population sizes and the overall structure of the food chain.

20.The codon UUU codes for phenylalanine. Codons are sequences of three nucleotides that code for a specific amino acid during protein synthesis. Phenylalanine is an essential amino acid that is used to build proteins. There are 64 possible codons that can be formed by combining four nucleotides in groups of three. Each codon codes for a specific amino acid or serves as a stop signal. Therefore, the correct option is (b) UUU.

21. Answer: A) In vitro fertilization (IVF). Because IVF has a relatively low success rate, it is common to transfer multiple embryos to increase the chances of pregnancy. However, this also increases the risk of multiple gestations.

22. The correct answer is b) Grinnel. The term "niche" was first introduced by Joseph Grinnel in his 1917 paper "The niche-relationships of the California Thrasher". Grinnel defined a niche as the "total expression of the habits of a species, or more narrowly, as that portion of the habitat which is actually exploited by the organism".



23. The correct answer is (a) Endangered. A species that is in danger of extinction is classified as endangered. This classification indicates that the species faces a very high risk of extinction in the wild if the threats and pressures on its population are not mitigated.

24. Answer: (a) Log phase

Explanation: The log phase, also known as the exponential phase, is the period of rapid growth in a population when it adapts to a new environment and reproduces at a high rate. During this phase.

25.. b) Calcitonin is a recombinant product used in the treatment of infertility

Explanation: Calcitonin is a hormone that is produced by the thyroid gland and is involved in regulating calcium levels in the body. It is not used in the treatment of infertility. The other statements are correct: gene therapy involves replacing defective genes with normal ones, Bt toxin is a biodegradable insecticide, and Trichoderma sp. Is a biocontrol agent used to combat fungal diseases in plants.

26. Answer: c) Reverse transcriptase

Explanation: Reverse transcriptase is an enzyme that can synthesize a single-stranded DNA molecule from an RNA template. This process is called reverse transcription and is used by retroviruses such as HIV to convert their RNA genome into DNA, which can then be integrated into the host genome

27. Correct Answer: c) Diaphragm

Explanation: A diaphragm is an example of a barrier contraceptive method. It is a shallow, dome-shaped device made of silicone or latex that is inserted into the vagina to cover the cervix. The diaphragm acts as a physical barrier, preventing sperm from entering the uterus and reaching the egg, thus providing contraception. It needs to be used in combination with a spermicide for increased effectiveness. Other examples of barrier contraceptive methods include male and female condoms, cervical caps, and contraceptive sponges.

28. In a scrubber, the exhaust is passed through:

a) Both (a) and (b)

Scrubbers are air pollution control devices used to remove pollutants from industrial exhaust gases. They typically involve passing the exhaust through a spray of water (option a) or a spray of lime (option b), or sometimes a combination of both. The water or lime reacts with the pollutants, such as sulfur dioxide (SO<sub>2</sub>), to remove them from the exhaust before it is released into the atmosphere



29. Answer: a) Erythroxylon coca

Explanation: Cocaine is a powerful stimulant drug that is obtained from the leaves of the coca plant, Erythroxylon coca.

30.(b) The correct descriptions of the entities in the equation are: P2 = homozygous dominant genotype, 2pq = heterozygous genotype, Q2 = homozygous recessive genotype. Therefore, options (b) I and III are not described correctly.

31. Answer: (b) Point mutation

Explanation: Sickle-cell anemia is caused by a point mutation in the beta-globin gene, which results in the substitution of valine for glutamic acid at position 6 in the beta-globin chain of hemoglobin.

32. Answer: c) Selectable marker

Explanation: The ampicillin-resistant gene in recombinant DNA is commonly used as a selectable marker, allowing scientists to identify cells that have successfully taken up the recombinant DNA by selecting cells that are able to grow in the presence of ampicillin.

33. The correct answer is (b) Buffer zone. In the biosphere reserves, human settlement is permissible in the buffer zone. Biosphere reserves are designated areas that aim to conserve biodiversity while promoting sustainable development. They consist of three zones: the core zone (strictly protected for conservation purposes), the buffer zone (where limited human activity is allowed), and the transition zone (where sustainable activities and research are conducted).

34. Answer: a) Ozone, peroxyacetyl nitrate, and NO<sub>x</sub>

Explanation: The primary components of photochemical smog formed in congested metropolitan cities include ozone (O<sub>3</sub>), peroxyacetyl nitrate (PAN), and nitrogen oxides (NO<sub>x</sub>). These pollutants are produced through chemical reactions involving sunlight, nitrogen oxides, volatile organic compounds, and oxygen.

35. The approximate length and width of the testes are 5-6 cm and 3-4 cm, respectively.

Explanation: This answer is the correct option (b) and is a better way of presenting information as it is more specific and accurate.

36.b) Sponges commonly reproduce through gemmule formation, which involves the formation of specialized cells (gemmules) that can grow into new individuals under favorable conditions.

37.(d) Phosphorus is essential for the formation of shells, bones, and teeth. Phosphorus is a vital nutrient required for various biological processes, including the formation and mineralization of skeletal structures. Shells, bones, and teeth contain calcium phosphate, a compound that provides strength and structure to these body parts.

38.The correct answer is c) A-carbon monoxide; B-oxygen. Smoking results in the build-up of carbon monoxide in the blood which reduces the delivery of oxygen to the tissues.

39.a) Luteinizing hormone – failure of ovulation

Explanation: Luteinizing hormone (LH) is a hormone released by the pituitary gland that plays a key role in regulating the menstrual cycle and ovulation in females. A deficiency of LH can lead to a failure of ovulation, which can result in infertility. Insulin deficiency leads to diabetes mellitus, not diabetes insipidus. Thyroxine deficiency leads to hypothyroidism, not tetany. Parathyroid hormone deficiency leads to hypoparathyroidism, not diabetes mellitus.

40. b) embryo

Explanation: The mass of cells enclosed by the integuments is the developing embryo, which is the future plant that will grow from the seed.

41.(d) All three statements are correct. Protein crystals containing a toxic insecticidal protein, commonly known as Bt toxin, are produced by certain bacteria and are toxic to specific insect pests. The protein is activated by the alkaline pH of the gut of the insect pest and binds with the epithelial cells of the midgut of the insect pest, ultimately killing it. The carrier bacterium that carries the protein is itself resistant to the toxin and is not killed by it.

42.(c) Propionibacterium Shermaine

Swiss cheese is a type of cheese made by introducing the bacterium Propionibacterium Sharmaine during the cheese-making process. This bacterium produces carbon dioxide gas, which causes the characteristic holes or “eyes” in Swiss cheese.

#### 43.c) Polymerase chain reaction

Explanation: Gene amplification using primers can be achieved through polymerase chain reaction (PCR). PCR uses short primers that are complementary to the sequences flanking the target DNA sequence. These primers are used to selectively amplify the target sequence.

#### 44. Answer: c) Normal but less efficient allele

Explanation: In incomplete dominance, the phenotype of the heterozygous individual is a blending of the phenotypes of the two homozygous parents. One allele function normally, but the other allele is less efficient, resulting in an intermediate phenotype.

45. Answer: The correct answer is c)  $\beta$ -galactosidase. This enzyme cleaves lactose into glucose and galactose.

#### 46.B) Do not specify any amino acid

The triplet codons UGA, UAG, and UAA are termed as termination codons because they do not specify any amino acid. In the genetic code, codons are three-nucleotide sequences on mRNA that correspond to specific amino acids or stop signals. Most of the codon's code for amino acids, but these three codons, UGA, UAG, and UAA, do not code for any amino acid. Instead, they signal the termination of protein synthesis during translation. When a ribosome encounters one of these termination codons on the mRNA, it releases the newly synthesized protein and detaches from the mRNA molecule, thus ending the translation process.

#### 47. A) Satellite RNA

A segment of single-stranded RNA (<1500 nts) that remains associated with other viruses for replication and causes various diseases is commonly known as satellite RNA. Satellite RNAs are small RNA molecules that depend on the presence of a helper virus for their replication. They do not have the ability to replicate on their own but rely on the replication machinery of the helper virus. Satellite RNAs can interfere with the replication or gene expression of the helper virus and contribute to the symptoms and pathogenicity of the viral infection.

48. B) Ecological pyramids of biomass in a parasitic food chain of a tree ecosystem

Ecological pyramids depict the relationship between different trophic levels in an ecosystem, representing the distribution of energy, biomass, or numbers among the organisms. Normally, ecological pyramids show a decreasing pattern as we move up the trophic levels, with producers at the base and top predators at the apex. However, in certain cases, the ecological pyramid of biomass can be inverted. This occurs in parasitic food chains, where the biomass of parasites may exceed the biomass of their hosts. In a parasitic food chain of a tree ecosystem, the parasites may have higher biomass compared to the trees they infect, resulting in an inverted pyramid of biomass.

49. C) Adenine + Thymine, Cytosine + Guanine

Complementary base pairing refers to the specific pairing of nucleotide bases in DNA or RNA. In DNA, adenine (A) always pairs with thymine (T), and cytosine (C) always pairs with guanine (G). This pairing is based on hydrogen bonding between the bases. Therefore, the correct complementary base pairing is adenine with thymine and cytosine with guanine (Adenine + Thymine, Cytosine + Guanine).

50. (a) Soil will become rich in nitrogen content

Azotobacter is a beneficial nitrogen-fixing bacterium commonly found in soil. When Azotobacter is added to a wheat crop, it forms a symbiotic relationship with the plant. Azotobacter has the ability to convert atmospheric nitrogen into a form that is usable by plants. This process is known as nitrogen fixation. By adding Azotobacter to a wheat crop, the bacterium can fix nitrogen from the air and convert it into a form that the plants can absorb and utilize. This enriches the soil with nitrogen, which is an essential nutrient for plant growth. Therefore, adding Azotobacter to a wheat crop would result in the soil becoming rich in nitrogen content.

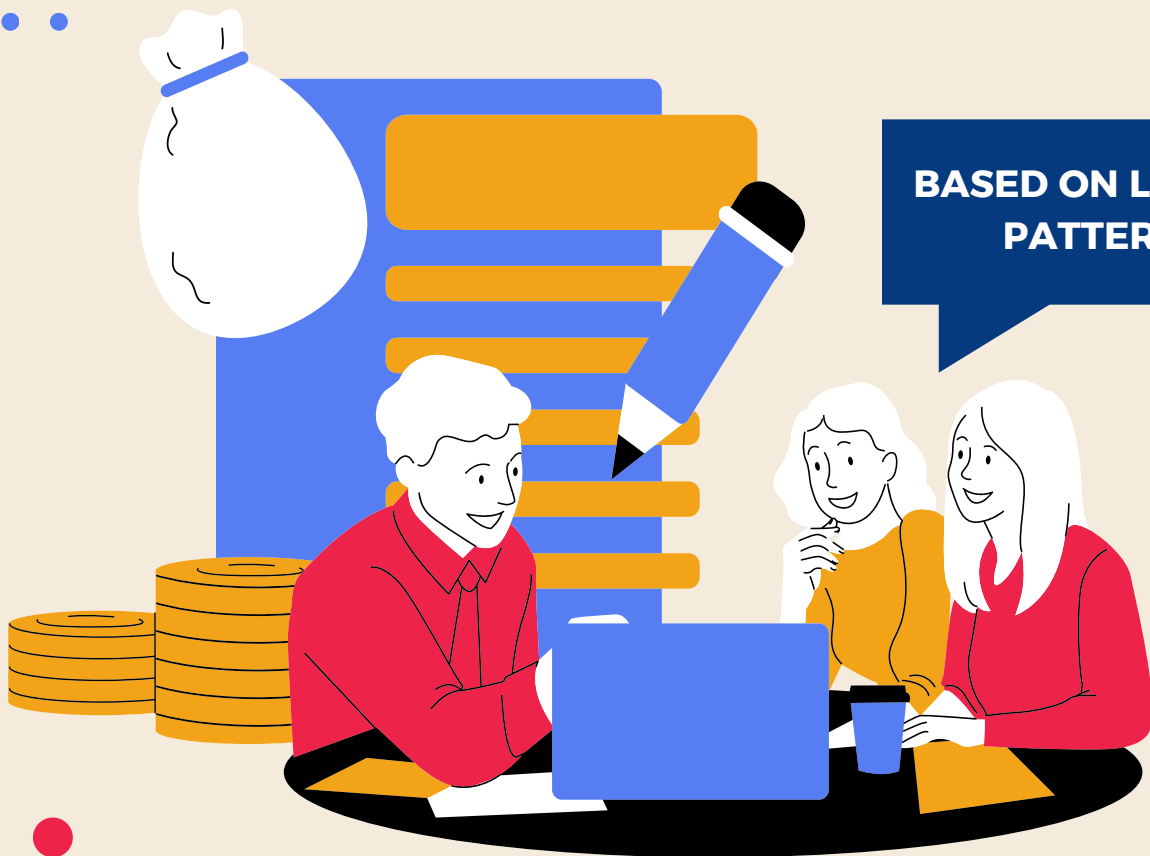


# CUET 2024

## BIOLOGY

### Sample Paper 2

BASED ON LATEST  
PATTERN





## PRACTICE PAPER

02

1. Which of the following statements best describes the difference between natural selection and sexual selection?

- a) Sexual selection occurs during sexual intercourse.
- b) Natural selection is a type of sexual selection.
- c) Sexual selection is a type of natural selection.
- d) Sexual selection occurs within demes.

2. In Mendel's experiment, when did the recessive character of dwarfness appear?

- a) F1
- b) F2
- c) F3
- d) F2 and F3

3. Oldest viable seed is of

- a) Lupine
- b) Ficus
- c) Date palm
- d) Phoenix

4. In the species area relationship, 'S' represents

- a) Species richness
- b) Slope of the line
- c) Specific area
- d) Special species

5. What are primers?

- a) Small chemically synthesized oligonucleotides of about 10-18 nucleotides that are complementary to the region of template DNA
- b) Chemically synthesized oligonucleotides of about 10-18 nucleotides that are not complementary to the region of template DNA
- c) The double-stranded DNA that needs to be amplified
- d) Specific sequences present on recombinant DNA
- e)

6. What does pedology refer to the study of?

- a) Soil
- b) Water
- c) Population
- d) Fossils



7. Which two organisms are considered producers?

- a) Plants and phytoplankton's
- b) Plants and consumers
- c) Zooplanktons and phytoplankton's chlorophylls
- d) Phytoplankton's and

8. Minamata disease occurs in which country?

- a) Japan
- b) Australia
- c) India
- d) China

9. Which restriction endonuclease recognizes the recognition site GAATTC?

- a) Eco RI
- b) Hind II
- c) Eco RII
- d) Bam HI

10. Which enzymes are required for protoplast fusion?

- a) Cellulose, hemicellulose, pectinase
- b) Pectinase
- c) Ligase, hemicellulose
- c) Hemicellulose

11. Carcinoma refers to

- a) Malignant tumor of the colon
- b) Benign tumor of the connective tissue
- c) Malignant tumor of the connective tissue
- d) Malignant tumor of the skin or mucous membrane

12. Which of the following is not a type of assisted reproductive technology (ART)?

- a) In vitro fertilization (IVF)
- b) Intrauterine insemination (IUI)
- c) Gamete intrafallopian transfer (GIFT)
- d) Natural cycle reproduction

13. Strobilanthes kunthiana is also called

- a) Neelakurinji
- b) Peela kuranji
- c) Hara kuranji
- d) Kala kuranji

14. The hormone responsible for milk production in the mammary glands is

- a) Prolactin
- b) Estrogen
- c) Progesterone
- d) Oxytocin



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SOLUTIONS**

15. In a cross between plants having yellow round (YYRR) and green wrinkled (yyrr) seeds, what will be the ratio between seeds having yellow and green seed color?

- a) 3:2                      b) 3:1                      c) 9:7                      d) 7:9

16. The polypeptide chains present in gamma immunoglobulin are

- a) 2                      b) 4                      c) 6                      d) 8

17. Which term describes the lightly stained, transcriptionally active part of chromatin?

- a) Euchromatin              b) Heterochromatin              c) Chromosome              d) Chromonemata

18. Which substance is used as a “clot buster” to remove clots from blood vessels in patients who have had a heart attack?

- a) Ethanol                      b) Statins                      c) Cyclosporin-A                      d) Streptokinase

19. How does the efficiency of energy transfer between trophic levels affect the length of a food chain?

- a) Higher energy transfer efficiency leads to shorter food chains.  
b) Lower energy transfer efficiency leads to shorter food chains.  
c) Higher energy transfer efficiency leads to longer food chains.  
d) Lower energy transfer efficiency leads to longer food chains

20. The Kyoto Protocol is related to:

- a) Ozone layer depletion                      b) Greenhouse effect  
c) Water pollution                      d) Conservation of wildlife

21. Which type of RNA molecule is synthesized using a DNA template during transcription?

- a) Messenger RNA (mRNA)                      b) Transfer RNA (tRNA)  
c) Ribosomal RNA (rRNA)                      d) All of the above

- a) The process of converting carbon dioxide into organic compounds by plants during photosynthesis.
- b) The removal of excess carbon dioxide from the atmosphere by human activities.
- c) The release of carbon dioxide during cellular respiration by animals.
- d) None of the above.

a) Autoimmunity      b) Passive immunity    c) Active immunity    d) Innate immunity

a) All bacteria                      b) Tobacco Mosaic Viruses (TMV)

c) QB bacteriophage            d) both b) and c)

a) rDNA                      b) T-DNA                      c) mDNA                      d) cDNA

a) Amensalism      b) Parasitism      c) Predation      d) Exploitation

a) Pea plant                      b) Drosophila                      c) Evening primrose                      d) Maize plant

a)Body louse - Typhoid                      b)House fly - Yellow fever  
c)Anopheles - Malaria                      d)Aedes - Plague



29. According to the National Forest Policy (1988), the recommended percentage of forest cover is:

- a) 33% for plains and 67% for hills,
- b) 37% for plains and 63% for hills,
- c) 20% for plains and 70% for hills,
- d) 23% for plains and 77% for hills.

30. Which of the following is not a type of assisted reproductive technology (ART)?

- a) In vitro fertilisation (IVF)
- b) Gamete intrafallopian transfer (GIFT)
- c) Intrauterine insemination (IUI)
- d) Tubal ligation

31. The transfer of pollen from the anther to the stigma of a flower is known as:

- a) Fertilization
- b) Pollination
- c) Double fertilization
- d) None of the above

32. Which of the following best describes a point mutation?

- a) A change in the number of chromosomes
- b) A change in the sequence of DNA bases
- c) A change in the structure of a chromosome
- d) A change in the function of a protein

33. Which of the following is not a characteristic of Baculoviruses (Nucleopolyhedrovirus)?

- a) Host specificity
- b) Narrow spectrum applications
- c) Effects on non-target insects
- d) Utility in IPM programme

34. Which of the following diseases can be controlled by enhancing resistance through mutation in moong bean?

- a) Yellow mosaic virus
- b) Powdery mildew
- c) Black rust
- d) All of the above

35. Which is the most effective method for obtaining virus-free plants through tissue culture?

- a) Protoplast culture
- b) Embryo rescue
- c) Anther culture
- d) Meristem culture

36. Acid rain is caused by:

- a)  $\text{CO}_2$  and  $\text{H}_2\text{O}$       b)  $\text{CO}_2$  and  $\text{NO}_2$       c)  $\text{SO}_2$  and  $\text{NO}_2$       d)  $\text{SO}_2$  and  $\text{N}_2\text{O}$

37. Pronuba and Yucca have a mutualistic relationship in nature. This situation is described as:

- a) Pollution,    b) Coextinctions,    c) Alien species invasions,    d) Over-exploitation.

38. Choose the incorrect statement regarding the observations drawn from the human genome project.

- (a) Repetitive sequences are stretches of RNA.
- (b) Less than 2 per cent of the genome codes for protein.
- c) SNPs help in tracing human history.
- d) Repetitive sequences make up a very large portion of the human genome.

39. Which is correct about anthers. They are:

- a) Haploid    b) Diploid    c) Diploid as well as triploid    d) Haploid, diploid and triploid

40. Which of the following processes occur(s) during the charging or aminoacylation of tRNA?

- a) Activation of amino acids in the presence of ATP
- b) Linking of amino acids to their cognate tRNA
- c) Both (a) and (b)
- d) None of the above

41. How many seminiferous tubules are present in a testicular lobule?

- (a) 3-5                      (b) 22-6                      (c) 5-7                      (d) 1-3

42. What is the phenotypic ratio of a monohybrid cross in the F<sub>2</sub> generation?

- a) 3:1                      b) 1:2:1                      c) 2:1:1                      d) 9:3:3:1

43. The concept of biodiversity hotspots was introduced by:

- (a) Charles Darwin
- (b) Alexander von Humboldt
- (c) Jane Goodall
- (d) Rachel Carson

44. Consider the following statements:

- I. Soil without a vegetation cover is eroded by both wind and water.
- II. Excessive irrigation results in waterlogging of soil.
- III. Increased salt concentration damages agriculture.

Which of the statements given above are correct?

- a) I and II
- b) I and III
- c) II and III
- d) I, II, and III

45. What bacteria was the first to be used as a biopesticide on a commercial scale in the world?

- a) *Bacillus thuringiensis*
- b) *E. coli*
- c) *Pseudomonas aeruginosa*
- d) *Agrobacterium tumefaciens*

46. Mast cells have important role in the development of

- a) Allergens
- b) Allergy
- c) Inflammation
- d) Both (b) and (c)

47. Why some organisms switch from asexual to sexual reproduction under stressful conditions?

- a) Sexual reproduction is simple and more rapid, allowing larger numbers of offspring to be produced
- b) Sexual reproduction requires two separate individuals who can mutually provide nutrient support during stress
- c) Sexual reproduction produces individuals with new combinations of recombined chromosomes, increasing diversity
- d) Asexual reproduction requires more energy



48. Which hormone is primarily responsible for thickening the endometrial lining during the menstrual cycle?

- a) Luteinizing hormone (LH)
- b) Follicle-stimulating hormone (FSH)
- c) Estrogen
- d) Progesterone

49. Acrosome secretes

- a) Hyaluronic acid
- b) Hyaluronidase
- c) TSH
- d) Fertilizin

50. For optimal ecological balance, the land mass of a country in plains should be covered with forests to the extent of:

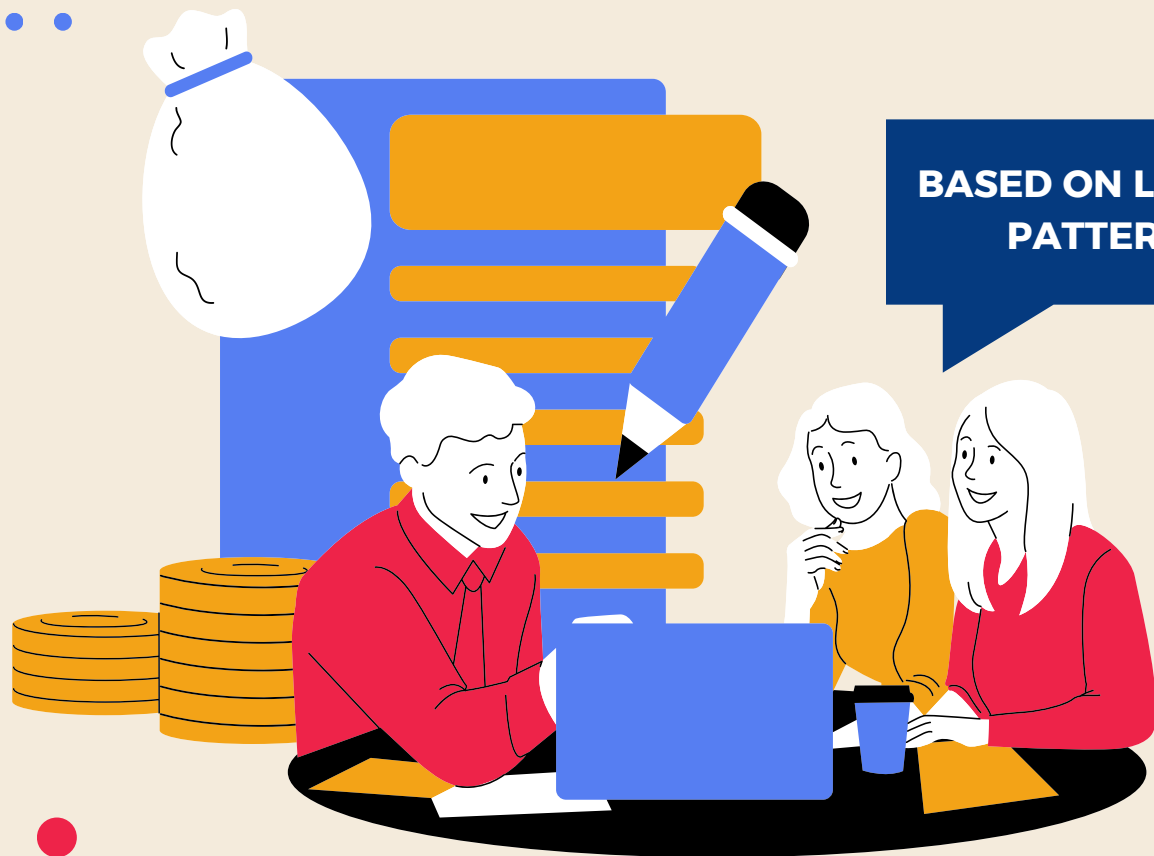
- a) 23%
- b) 33%
- c) 44%
- d) 35%



# CUET 2024

## BIOLOGY

### Sample Paper 3



## PRACTICE PAPER

03

1. Which microbe is used in the commercial production of butyric acid?

- a) *Clostridium butylicum*
- b) *Streptococcus butylicum*
- c) *Trichoderma polysporum*
- d) *Saccharomyces cerevisiae*

2. The dolphin found in Chilka lake is

- a) *Delphinus*
- b) *Irrawaddy*
- c) *Sotalia*
- d) *Tursiops*

3. Any species growing under unlimited resource conditions can reach enormous population densities in a short time. Darwin showed how even a slow-growing animal like an elephant could reach enormous numbers in the absence of checks, and that characteristic of an organism is called:

- a) A – logistically, B – fast, C – carrying capacity
- b) A – logistically, B – slow, C – biotic potential
- c) A – exponentially, B – slow, C – biotic potential
- d) A – exponentially, B – fast, C – biotic potential

4. Which term refers to the lengthwise running groove on an anther that separates the theca?

- a) Rupture line
- b) Line of dehiscence
- c) Suture of anther
- d) None of the above

5. Which type of RNA molecule makes up the structure of ribosomes?

- a) Messenger RNA (mRNA)
- b) Transfer RNA (tRNA)
- c) Ribosomal RNA (rRNA)
- d) Small nuclear RNA (snRNA)

6. Maximum cranial capacity is of

- a) Neanderthal man
- b) Cro – magnon man
- c) Modern man
- d) Java man



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7. Which of the following STIs can be passed from a pregnant person to their baby during childbirth?

- a) Herpes                      b) Syphilis                      c) Chlamydia                      d) Trichomoniasis

8. In humans, the inheritance of ABO blood group is an example of

- a) Pleiotropy   b) Multiple alleles   c) Sex-linked inheritance   d) Polygenic inheritance

9. .... is a phenomenon by which genetic variation is achieved through changes in the base sequences within genes, creating a new character or trait absent in the parental generation.

- A) Apomixis                      b) Mutation                      c) Mutation breeding                      d) Heterosis

10. Annual variations in the intensity and duration of temperature and 50 and 250 cm annual variation in precipitation, account for the formation of a major biome as

- a) Temperate forest                      b) Coniferous forest   c) Tropical forest                      d) Grassland

11. What does the concept of Joint Forest Management (JFM) involve?

- a) Working in close association with local communities for protecting and managing forests for mutual benefits  
b) Conservation of forests and agricultural land by NGOs  
c) Conservation of forests and agricultural land by the state government  
d) Conservation of forests and agricultural land by local communities

12. 'Roise' cow known to produce a type of milk which has all the following characteristics

- I. Protein content of 2.4 g/L
- II. Human -lactalbumin
- III. More nutritionally balanced for human babies than natural cow milk

Which of the above statements are correct?

- a) I and II                      b) I and III                      c) II and III                      d) I, II and III

13. In a cross between a pure tall and a dwarf plant, what will be the phenotype of their offspring?

- a) tall                      b) Short                      c) Intermediate                      d) None of these

14. Which cells provide nutrition to the male germ cells?

- (a) Interstitial cells      (b) Leydig cells                      (c) Sertoli cells                      (d) Both (a) and (b)

15. Which one of the following is the most primitive ancestor of man?

- a) Homo habilis   b) Australopithecus   c) Ramapithecus punjabicus   d) Homo neanderthalensis

16. Monoclonal antibodies are used for

- a) Immune suppression for kidney transplantation                      b) Growth induction  
c) Suppression of symptoms of rabies                      d) Treatment of breast cancer

17. What is responsible for more advancements in genetic engineering?

- a) Restriction endonuclease                      b) Reverse transcription  
c) Protease                      d) Zymase

18. Which units are used to express primary production?

- a) Weight ( $\text{gm}^{-2}$ ) or energy ( $\text{kcal m}^{-2}$ )                      b) Volume ( $\text{cm}^3$ ) or length (m)  
c) Temperature ( $^{\circ}\text{C}$ ) or pressure (Pa)                      d) None of the above

19. The excessive growth of planktonic (free-floating) algae, accelerated by nutrients like nitrogen and phosphorus present in domestic sewage, can lead to which of the following phenomena?

- a) Algal bloom                      b) Biomagnification      c) Eutrophication                      d) Both (a) and (c)

20. Which of the following is not a function of RNA?

- a) To carry genetic information from DNA to ribosomes
- b) To serve as a template for protein synthesis
- c) To catalyze chemical reactions
- d) To store genetic information

21. The part of fallopian tube closest to the ovary is

- a) Isthmus
- b) Infundibulum
- c) Cervix
- d) Ampulla

22. What is the ratio between mortality and natality called?

- a) Population ratio
- b) Vital index
- c) Density coefficient
- d) Census ratio

23. The primary host of Plasmodium is

- a) Man
- b) Male Culex
- c) sheep
- d) Female Anopheles

24. Which of the following is an example of external fertilization?

- a) The fusion of sperm and egg inside the female reproductive tract of a human
- b) The release of eggs and sperm into water by fish
- c) The transfer of pollen from the stamen to the stigma of a flower
- d) The fusion of sperm and egg inside a bird's reproductive tract

25. Which of the following is not a characteristic of the genetic code?

- a) It is universal
- b) It is redundant
- c) It is non-overlapping
- d) It is self-replicating



26. Note the following words.

- |               |                              |
|---------------|------------------------------|
| I. Skin       | II. Phagocytes               |
| III. B-cells  | IV. Inflammation             |
| V. Antibodies | VI. T-cells                  |
| VII. Fever    | VIII. Antimicrobial proteins |
| IX. NK-cells  | X. Secretions                |

Identify the factors involved in second line of defense.

- a) II, IV, VII and IX    b) II, III, V and IX    c) IV, VI, VIII and X    d) III, V, VII and VIII

27. What is *Bacillus thuringiensis* used for?

- a) Biofungicide    b) Biopesticide    c) Biocontrol agent    d) Bioweapon

28. What is the meaning of Jhum cultivation?

- a) Cultivation of neem trees    b) Cultivation of medicinal plants  
c) Tribal methods of shifting cultivation    d) Cultivation of timber plants

29. Which transgenic human protein product has been used to treat emphysema?

- a) Alpha-1 antitrypsin    b) Beta-globulin  
c) Cry I Ab protein    d) Cry II Ac protein

30. Which of the following provide evidence for evolution of life forms on earth?

- (a) Fossil studies (paleontological evidences)  
(b) Morphological and comparative anatomical studies  
(c) Biochemical studies  
(d) All of the above

31. In aquatic ecosystems, a significant proportion of energy flows through the:

- a) Grazing food chain    b) Detritus food chain    c) Complex food chain    d) Food web

32. Which of the following factors was not taken into account by Darwin in his theory of natural selection?

- a) Struggle for existence
- b) Discontinuous variations
- c) Parasites and predators as natural enemies
- d) Survival of the fittest

33. Which of the following statements is true about Phenylketonuria (PKU) in humans?

- a) It manifests through phenotypic expressions
- b) It is characterized by mental retardation
- c) It leads to hair reduction and skin pigmentation
- d) All of the above

34. During his experiments, Mendel used the term “factor” for:

- (a) Genes
- (b) Traits
- (c) Characters
- (d) Qualities

35. DNA fingerprinting involves identifying the differences in some specific regions in the DNA sequence called

- a) Non-repetitive DNA
- b) Coding DNA
- c) Non-coding DNA
- d) Repetitive DNA

36. What is the purpose of emasculation in artificial hybridization?

- a) To remove the stigma from the plant
- b) To remove the anthers from the plant
- c) To remove the ovules from the plant
- d) None of the above

37. In grafting scion forms:

- a) Shoot system
- b) Root system
- c) New plant
- d) Hybrid plant

38. The Chipko movement (1974) is a renowned eco-development program initiated by Sunder Lal Bahuguna in Tehri Garhwal (Uttarakhand). It is associated with:

- A) Plant conservation
- b) Deforestation
- c) Reforestation
- d) Afforestation

(a) wine and beer

(c) whisky, brandy, and rum

a) S-shaped

c) J-shaped with a tail

### a) Gonorrhea

### c) Syphilis

## A) Interferons

### c) Histamines

a) They enhance biodiversity within food chains.

b) They disrupt energy flow within food chains.

c) They promote stability and balance in food chains.

a) Insulin obtained from pigs

b) Insulin identical to human insulin

c) Insulin obtained from a virus



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45. .... is a phenomenon by which genetic variation is achieved through changes in the base sequences within genes, creating a new character or trait absent in the parental generation.

- a) Apomixis                                      b) Mutation                                      c) Mutation breeding                                      d) Heterosis

47.. The medicinal plant produces a chemical called

- a) Opine                                      b) Reserpine                                      c) Vinblastin                                      d) Reserpine

47.During daytime, the sound level in a silent zone is approximately:

- a) 50 dB                                      b) 70 dB                                      c) 20 dB                                      d) 30 dB

48.Newly developed pathogens are often more damaging to their host because they are:

- a) Distant pathogens                                      b) Chronic pathogens  
c) Instant pathogens                                      d) Genetically improved pathogens

49.     Earliest fossil ape prior to the ape man was

- a) Ramapithecus                                      b) Dryopithecus                                      c) Australopithecus                                      d)Homo erectus

50. Which of the following pairs is incorrect?

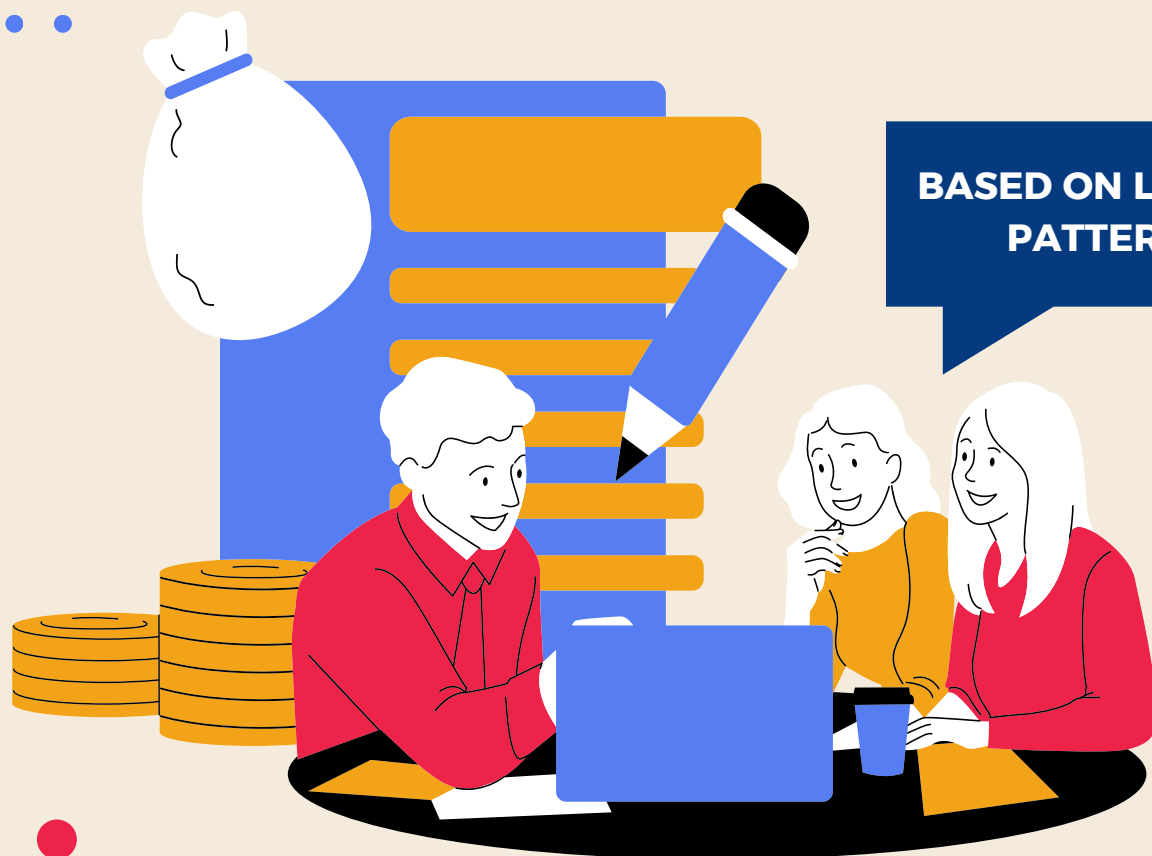
- a) Cushion of fatty tissue covered by pubic hair – Mons pubis  
b) Membrane covering opening of the vagina – Hymen  
c)Finger-like structure above the urethral opening – Clitoris  
d)Uterine layer exhibiting strong contraction during delivery – Endometrium



# CUET 2024

## BIOLOGY

### Sample Paper 4





1. What is the function of the scrotum?

- a) To maintain the temperature of the testes
- b) To regulate body temperature
- c) To regulate the level of growth hormone
- d) To regulate the level of male hormone

2. Which of the following is not a type of DNA mutation?

- a) Substitution
- b) Deletion
- c) Addition
- d) Replication

37. Which of the following is not an example of adaptive radiation?

- a) Wombat, marsupial rat, flying phalanges.
- b) Darwin's finches.
- c) Different placental mammals in Australia.
- d) Placental wolf and Tasmanian wolf.

4. What is the karyotype of a human male and female?

- a) Male =  $44 + XX$ , Female =  $44 + XY$
- b) Male =  $44 + XY$ , Female =  $44 + XX$
- c) Male =  $44 + XO$ , Female =  $44 + XX$
- d) Male =  $44 + XX$ , Female =  $44 + XO$

5. What is the innermost layer of the microsporangium?

- a) Tapetum
- b) Endothecium
- c) Middle layer
- d) Epidermis

6. Who established the function of penicillin as an antibiotic?

- a) Alexander Flemming
- b) Ernst Chain
- c) Howard Florey
- d) Both (b) and (c)

7. Some of the nutrient cycles are labelled as below

- I. Sulphur cycle
- II. Phosphorus cycle
- III. Carbon cycle
- IV. Nitrogen cycle

Of these, the sedimentary cycle is represented by

- a) I only                      b) II only                      c) III only                      d) I and II

8. If there were no greenhouse effect, the average temperature at the Earth's surface would be:

- a) 15°C                      b) -18°C                      c) -6°C                      d) 20°C

9. Which of the following options correctly fills in the blanks A, B, and C in the given statement?

“Many parasites have evolved to be \_\_\_\_\_ in such a way that both host and the parasite tend to \_\_\_\_\_, that is, if the host evolves special mechanisms for rejecting or resisting the parasite, the parasite has to evolve mechanisms to \_\_\_\_\_ and neutralize them, in order to be successful with the same host species.”

- a) A-host-specific, B-evolve, C-counteract
- b) A-host-specific, B-coevolve, C-counteract
- c) A-source-specific, B-coevolve, C-counteract
- d) A-source-specific, B-evolve, C-counteract

10. Why is the Bt toxin not toxic to human beings?

- a) The Bt toxin specifically targets insects.
- b) The activation of Bt toxin requires a temperature higher than the human body temperature.
- c) Bt toxin formation from the pro Bt state requires a lower pH than present in the human stomach.
- d) The conversion of pro Bt to Bt state only occurs in highly alkaline conditions.

11.What is the term for the mating of two individuals with different genotypes to produce genetic variation?

- a) Domestication      b) Incubation      c) Hybridization      d) Mutation

12.Which of the following describes a bioreactor?

- a) A hybridoma      b) A culture containing radioactive isotopes  
c) A culture for the synthesis of new chemicals      d) A fermentation tank

13.The most hazardous metal pollutant present in automobile exhaust is:

- a) Cadmium      b) Lead      c) Mercury      d) Copper

14.Which of the following options best describes the conformity of energy flow and energy transformation in living systems?

- a) Law of limiting factors      b) Liebig's law of minimum  
c) Laws of thermodynamics      d) Shelford's law of tolerance

15.What is the most widely used bioweapon?

- a) Bacillus subtilis      b) Pseudomonas putida      c) Bacillus anthracis      d) None of these

16.In hemophilia, the affected protein is part of a cascade of proteins that are involved in the:

- a) Formation of RBCs      b) Formation of WBCs and platelets  
c) Coagulation of blood      d) Anticoagulation

17 What effects would you expect if gene expression of the lac operon were completely repressed?

- a) The cell would be more efficient without 'wasting' the energy required for the low level of Lac Z, Lac Y, and Lac A gene expression.  
b) All lactose would accumulate within the cell and become toxic.  
c) Lactose would not be converted into the inducer and the operon could not be induced.  
d)All of the above.



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18. Transverse binary fission occurs in

- a) Euglena                      b) Amoeba                      c) Hydra                      d) Paramecium

19. What evidence does the diversity of finches and their adaptation to different feeding habits in the Galapagos Islands provide according to Darwin?

- a) Origin of species by natural selection                      b) Intraspecific variation  
c) Intraspecific competition                      d) Interspecific competition

20. Which embryological evidence supports evolution, as given by Ernst Haeckel?

- a) Presence of hair all over the body in adult human  
b) Absence of tail bone and presence of wisdom tooth  
c) Absence of vestigial gill slits in human's embryo  
d) Presence of a row of vestigial gill slits in the embryo of all vertebrates

21. In which year was the Biodiversity Act of India passed by the Parliament?

- a) 1996                      b) 1992                      c) 2002                      d) 2000

22. Which hormone is responsible for the development of secondary sexual characteristics in males?

- a) Testosterone                      b) Estrogen                      c) Progesterone                      d) FSH

23. Which of the following is a male sterilization method?

- a) Tubal ligation                      b) Vasectomy                      c) Copper IUD                      d) Hormonal implants

24. The types of gametes formed by the genotype RrYy are:

- (a) RY, Ry, rY, ry                      (b) RY, Ry, ry, ry                      (c) Ry, Ry, Yy, ry                      (d) Rr, RR, Yy, YY

25. What does “degeneracy” mean in the context of genetic code?

- a) One amino acid has more than one code triplet
- b) One amino acid has only one code triplet
- c) codons which specify the same amino acids differ only in the third base of the triplet
- d) Both (a) and (c)

26. What is the term used to describe the development of different functional structures from a common ancestral form?

- a) Differential evolution
- b) Adaptive radiation
- c) Non-adaptive radiation
- d) Regressive evolution

27. Which of the following cells are related with inflammatory reactions and immediate hypersensitivity?

- a) Mast cells
- b) Plasma cells
- c) Both (a) and (b)
- d) All of these

28. In poor countries, which crop can be used to prevent blindness?

- a) Golden rice
- b) Wheat
- c) Gram
- d) Pea

29. What is another term for regulators?

- a) Endotherms
- b) Exotherms
- c) Ectotherms
- d) Either (b) or (c)

30. MTP stands for:

- a) Medical Termination of Pregnancy
- b) Mental Trauma Phase
- c) Menstrual Pain
- d) None of the above

31. How can gene silencing be achieved?

- a) RNAi
- b) Antisense RNA
- c) Both (a) and (b)
- d) None of these



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32. The decline in the population of reptiles and birds is primarily caused by

- a) DDT                      b) Biofertilizers                      c) Bioinsecticides                      d) Sewage

33. Which antibiotic was extensively used to treat American soldiers wounded in World War II?

- a) Streptokinase                      b) Penicillin                      c) Statins                      d) Neomycin

34. The decomposition rate is highest when detritus is rich in:

- a) Nitrogen and sugar                      b) Phosphorus and sugar  
c) Calcium and sugar                      d) Both (b) and (c)

35. Which of the following is true about polyembryony?

- a) It is a type of asexual reproduction.  
b) It involves the production of multiple embryos from a single fertilization event.  
c) It results in offspring that are genetically identical to the parent.  
d) It is a common phenomenon in angiosperms.

36. Which hormone is primarily responsible for the development of secondary sexual characteristics in females?

- a) Estrogen    b) Progesterone    c) Testosterone    d) Follicle-stimulating hormone (FSH)

\

37. Which of the following options correctly completes the sentence: When a phosphate group is linked to ...A... group of nucleosides through ...B... bond, a corresponding ...C... is formed.

- a) A-5' OH, B-phosphodiester bond, C-nucleotide  
b) A-3' OH, B-phosphodiester bond, C-nucleotide  
c) A-2' OH, B-phosphodiester bond, C-nucleotide  
d) A-5' OH, B-phosphodiester bond, C-nucleoside

38. Which of the following statements best describes the difference between natural selection and sexual selection?

- a) Sexual selection occurs during sexual intercourse.
- b) Natural selection is a type of sexual selection.
- c) Sexual selection is a type of natural selection.
- d) Sexual selection occurs within demes

39. What is used to silence genes in RNAi?

- a) Double-stranded DNA
- b) Double-stranded RNA
- c) Single-stranded DNA
- d) Single-stranded RNA

40. How are proteins removed?

- a) Ribonuclease
- b) Chitinase
- c) Cellulase
- d) Protease

41. In situ conservation strategies include:

- I. National parks,
- II. Wildlife sanctuaries,
- III. Biosphere reserves,
- IV. Sacred forests/lakes.

Choose the correct option:

- a) I and II,
- b) II, III, and IV,
- c) I, II, and III,
- d) I, II, III, and IV.

42. The capacity of a cell explant to grow into a whole plant is called:

- a) Plant culture
- b) Tissue culture
- c) Cellular totipotency
- d) All of these

43. Which of the following factors determines the length of DNA?

- a) Position of nucleotides
- b) Number of nucleotide's
- c) Both (a) and (b)
- d) None of the above

44. An endemic species is defined as:

- a) A species that has been introduced to a new geographic area,
- b) A species found in many different geographic areas,
- c) A species found only on islands
- d) A species found naturally in just one geographic area.
- e)

45. Which antibiotic was extensively used to treat American soldiers wounded in World War II?

- a) Streptokinase      b) Penicillin      c) Statins      d) Neomycin

46. What is the mass of living matter at a trophic level in an area at any time called?

- a) Detritus      b) Humus      c) Standing state      d) Standing crop

47. What does PAR stand for in the context of photosynthesis?

- a) Photosynthesis Active Reaction      b) Photosynthesis Absorb Radiation
- c) Photosynthetically Active Radiation      d) Photosynthetically Active Reaction

48. Which of the following is an example of a detritivore?

- a) Millipedes      b) Earthworms      c) Fiddler crabs      d) All of the above

49. Which of the following sexually transmitted infections (STIs) can be prevented by vaccination?

- a) Gonorrhea      b) Syphilis      c) Human papillomavirus (HPV)      d) Trichomoniasis

50. Clone is a group of individuals got through:

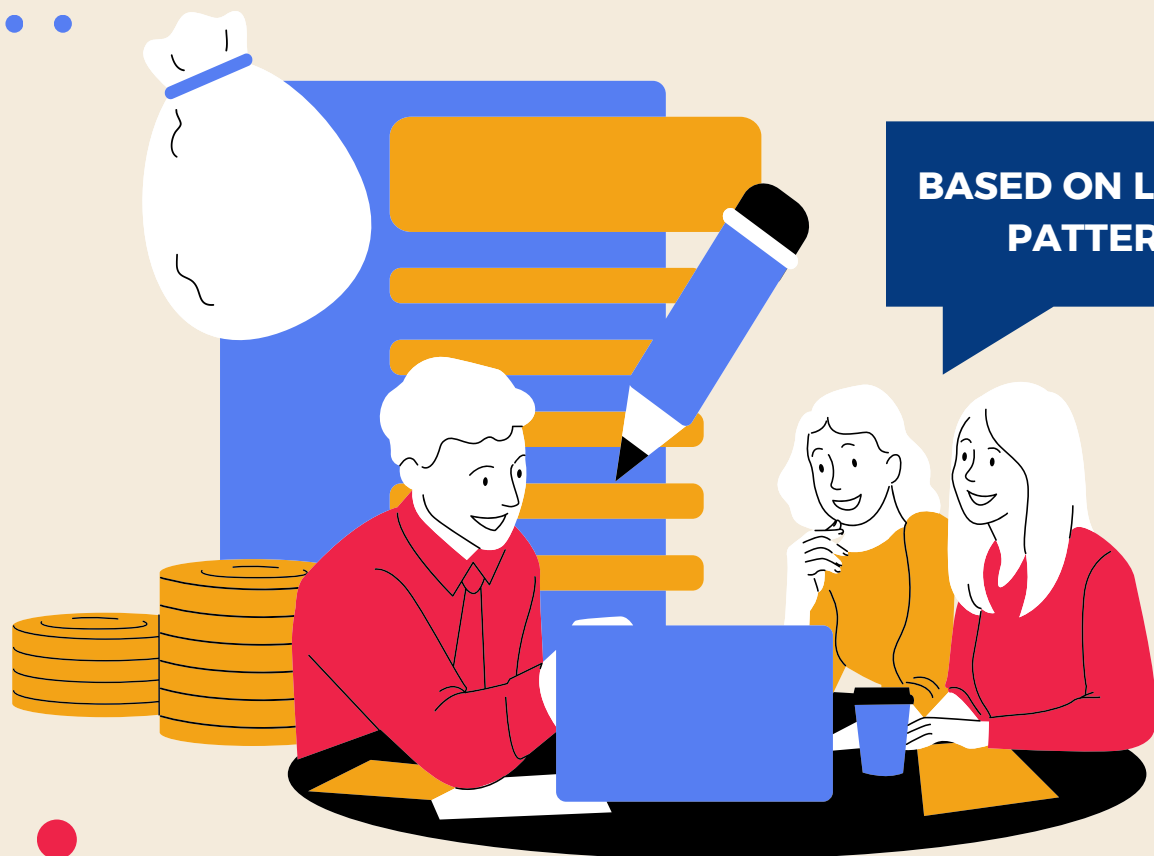
- a) Self-pollination      b) Cross pollination
- c) Vegetative propagation      d) Hybridization



# CUET 2024

## BIOLOGY

### Sample Paper 5



1. Which phase of the menstrual cycle is the most variable in terms of its duration?  
a) Menstrual phase    b) Follicular phase    c) Luteal phase    d) Ovulatory phase
  
2. What are the two key concepts of Darwin's theory of evolution?  
a) Genetic drift and mutation    b) Adaptive radiation and homology  
c) Mutation and natural selection    d) Branching descent and natural selection
  
3. A true breeding line is characterized by the presence of  
a) Stable trait inheritance due to the continuous self-pollination  
b) Varying traits in different generations due to the cross-pollination  
c) Single trait in all generations due to allogamy  
d) Varying trait inheritance in a single generation due to geitonogamy  
e)
  
4. In angiosperms, double fertilization involves the fusion of:  
a) Two sperm cells with the egg and the polar nuclei  
b) Two egg cells with the sperm and the polar nuclei  
c) One sperm cell with the egg and the other with the polar nuclei  
d) None of the above
  
5. Which of the following disease is caused by *Entamoeba histolytica*  
a) Malaria    b) Amoebiasis    c) Typhoid    d) Filariasis
  
6. Which gaseous component of biogas is the most flammable?  
a) Methane, CO<sub>2</sub>, H<sub>2</sub>, and H<sub>2</sub>S    b) Methane  
c) CO<sub>2</sub>, H<sub>2</sub>, and H<sub>2</sub>S    d) CO, methane, and H<sub>2</sub>S



7. Why is CNG considered a better fuel than diesel or petrol?

- I. CNG burns most efficiently without leaving any unburnt residue.
- II. CNG is cheaper than petrol or diesel.
- III. CNG cannot be siphoned off by thieves and adulterated like petrol or diesel.

Which of the statements given above are correct?

- a) I and II                      b) I and III                      c) II and III                      d) I, II, and III

8. What gene was introduced in the first transgenic cow?

- a) Human  $\alpha$ -lactalbumin              b)  $\alpha$ -1-antitrypsin              c) Casein              d) Cry-Iac

9. What are primers?

- a) Small chemically synthesized oligonucleotides of about 10-18 nucleotides that are complementary to the region of template DNA
- b) Chemically synthesized oligonucleotides of about 10-18 nucleotides that are not complementary to the region of template DNA
- c) The double-stranded DNA that needs to be amplified
- d) Specific sequences present on recombinant DNA
- e)

10. Note the following words.

- I. Skin                      II. Phagocytes  
III. B-cells                      IV. Inflammation  
V. Antibodies                      VI. T-cells  
VII. Fever                      VIII. Antimicrobial proteins  
IX. NK-cells                      X. Secretions

Identify the factors involved in second line of defense.

- a) II, IV, VII and IX                      b) II, III, V and IX  
c) IV, VI, VIII and X                      d) III, V, VII and VIII

11. Which type of biodiversity refers to the variety of habitats and ecosystems within a region?

- a) Genetic diversity   b) Species diversity   c) Ecological diversity   d) Habitat diversity

12. How does mineralisation by microorganisms contribute to nutrient release?

- a) Inorganic nutrients from humus are released.  
b) Both organic and inorganic nutrients from detritus are released.  
c) Organic nutrients from humus are released.  
d) Inorganic nutrients from detritus are released, and humus is formed

13. Which of the following sequences correctly shows the chronological order of events during callus culture?

- a) Callus → Cell division → Addition of cytokinin → Cells acquire meristematic property → Explant  
b) Explant → Cell division → Callus → Addition of cytokinin → Cells acquire meristematic property  
c) Explant → Cell division → Addition of cytokinin → Callus → Cells acquire meristematic property  
d) Explant → Callus → Cell division → Addition of cytokinin → Cells acquire meristematic property

14. What does pedology refer to the study of?

- a) Soil                      b) Water                      c) Population                      d) Fossils

15. Which of the following is not a barrier contraceptive method?

- a) Condoms  
b) Diaphragm  
c) Oral contraceptive pills  
d) Cervical cap

16. Which of the following is not a benefit of breastfeeding?

- a) Reducing the risk of breast cancer in the mother
- b) Providing optimal nutrition for the baby
- c) Helping the uterus return to its pre-pregnancy size
- d) Increasing the risk of postpartum depressibilities

17. Maximum cranial capacity is of

- a) Neanderthal man    b) Cro –magnon man    c) Modern man    d) Java man

18. During an allergic reaction, the binding of antigens to IgE antibodies initiates a response, in which chemicals cause the dilation of blood vessels and a host of other physiological changes. What are such chemicals called?

- A) Interferons    b) Hormones    c) Histamines    d) acetylamine

19. What is diapause?

- a) Stage of development    b) Stage of suspended development  
c) Stage of delayed morphology    d) Rapid developmental stage

20. What is the term used to describe the interconnected feeding relationships in an ecosystem?

- a) Food chain    b) Trophic web    c) Ecological network    d) Food pyramid

21. Which of the following serves as a biofertilizer in paddy fields?

- a) Anabaena    b) Azospirillum    c) Nostoc    d) Both (a) and (c)

22. What is the term used to describe the process by which pollutants become more concentrated as they move up the food chain?

- (a) Biomagnification.    b) Bioaccumulation  
c) Trophic amplification    d) Ecological enrichment

23. According to the Central Pollution Control Board (CPCB), particles that cause significant harm to human health have a diameter of:

- a) 2.50 micrometers   b) 5.00 micrometers   c) 10.00 micrometers   d) 7.5 micrometers

24. The primary objectives of wildlife conservation are to:

- I. Maintain ecological processes,
- II. Enhance wildlife diversity with exotic species,
- III. Prevent species migration,
- IV. Preserve overall life diversity.

25. Which of the following statements is NOT true for a clone?

- a) Clones are descended from a single parent.
- b) Identical twins are not clones.
- c) A clone is the result of sexual reproduction.
- d) Both (a) and (c) are true.

26. The excessive growth of planktonic (free-floating) algae, accelerated by nutrients like nitrogen and phosphorus present in domestic sewage, can lead to which of the following phenomena?

- a) Algal bloom      b) Biomagnification      c) Eutrophication      d) Both (a) and (c)

27. Which of the following statements are true?

- I. Ladybirds and dragonflies are used to get rid of aphids and mosquitoes
- II. Bacteria are used to control butterflies
- III. Trichoderma sp., free-living fungi, are present in root ecosystems where they act against several plant pathogens
- IV. Rhizobium is a symbiotic bacterium that lives in the stem of legumes

- a) I, II, and III      b) I, III, and IV      c) II, III, and IV      d) II and IV

28. What is biopiracy?

- a) The use of biological patents
- b) Theft of plants and animals
- c) The use of bioresources of a country without proper authorization
- d) Stealing of biological resources



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29. Which two organisms are considered producers?

- a) Plants and phytoplanktons
- b) Plants and consumers
- c) Zooplanktons and phytoplanktons
- d) Phytoplanktons and chlorophylls

30. Which of the following would you expect to find in an inducible system?

- a) A repressor protein, which is bound to DNA in absence of any other factor.
- b) A repressor protein, which is bound to DNA in the presence of a co-repressor.
- c) An activator protein, which is bound to DNA in the absence of any other factor.
- d) An activator protein, which is bound to DNA only in the absence of air inhibitor.

31. The embryo sac is also called

- a) Female gamete
- b) Synergids
- c) female gametophyte
- d) Egg of angiosperm

32. Which of the following sexually transmitted infections (STIs) can be prevented by vaccination?

- a) Gonorrhea
- b) Syphilis
- c) Chlamydia
- d) Human papillomavirus (HPV)

33. Survival of the fittest is possible due to the

- a) Overproduction
- b) Favorable variations
- c) environmental changes
- d) Inheritance of acquired characters

34. Taylor conducted similar experiments like Meselson and Stahl in 1958. What was the experimental organism of Taylor?

- (a) Vicia faba
- (b) Fungi
- (c) E. Coli
- (d) Protista

35. What is the function of mRNA in protein synthesis?

- a) It carries amino acids to the ribosome
- b) It holds the ribosome in place during translation
- c) It serves as a template for the synthesis of a protein
- d) It helps to break down the mRNA molecule after translation is complete



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36. Which is correct about anthers. They are:

- a) Haploid      b) Diploid      c) Diploid as well as triploid      d) Haploid, diploid and triploid

37. Out of 7 contrasting trait pairs selected by Mendel, how many traits were dominant and recessive?

- a) 7 and 7                      b) 8 and 6                      c) 6 and 8                      d) 5 and 9

38. Fossils are useful in studying which of the following?

- a) Extinct organisms                      b) History of organisms  
c) Both (a) and (b)                      d) None of the above

39. The tendency of the body to manifest a characteristic and unpleasant withdrawal syndrome on abrupt discontinuation of regular dose of drugs/alcohol is called

- A) Depression                      b) Dependence                      c) Abnormality                      d) All of these

40. The population of an insect species shows an explosive increase in numbers during the rainy season, followed by its disappearance at the end of the season. What does this demonstrate?

- A) S-shaped or sigmoid growth of this insect  
b) The food plants mature and die at the end of the rainy season  
c) Its population growth curve is of J-type  
d) The population of its predators increases enormously

41. The corpus luteum is formed from the remnants of the

- a) Ovarian follicle      b) Oocyte                      c) Graafian follicle                      d) Zygote

42.If there are four different types of nitrogenous bases (A, T, G, and C), how many different types of transitions and transversions are possible?

- a) Transition = 8, Transversion = 4
- b) Transition = 4, Transversion = 4
- c) Transition = 8, Transversion = 4
- d) Transition = 4, Transversion = 8

43.Which genes were introduced into cotton to protect it from cotton bollworms?

- a) Cry Ac and cry Ab
- b) Bt Ac and Bt Ab
- c) Cry I Ac and cry II Ab
- d) Nif genes

44.Sea plants are an example of:

- a) Xerophyte
- b) Mesophyte
- c) Hydrophyte
- d) Submerged plant

45.In India, the Air Prevention and Control of Pollution Act came into force in \_\_\_\_\_, but was amended in \_\_\_\_\_ to include \_\_\_\_\_ as an air pollutant.

- A) A: 1980, B: 1986, C: water
- b) A: 1981, B: 1987, C: noise
- c) A: 1982, B: 1988, C: radioactive
- d) A: 1983, B: 1989, C: soil

46.The total number of recognized biodiversity hotspots in the world is:

- a) 24,
- b) 12,
- c) 34,
- d) 52.

47.Which type of RNA molecule is synthesized using a DNA template during transcription?

- a) Messenger RNA (mRNA)
- b) Transfer RNA (tRNA)
- c) Ribosomal RNA (rRNA)
- d) All of the above

48.Which of the following situations is most likely to result in the highest rate of natural selection?

- a) Reproduction by asexual method
- b) Low mutation rate in a stable environment
- c) little competition
- d) Reproduction by sexual method



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49. Which of the following is an incorrect match?

- (a) Phenotype – Physical appearance of an organism
- (b) Genotype – Expressed genes
- (c) Homozygous – Identical alleles of a gene present at the same locus
- (d) Heterozygous – Genes of an allelic pair are not the same

50. Thalamus contributes in the fruit formation in

- a) Apple
- b) Strawberry
- c) Cashew
- d) All of these



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